DOCUMENT RESUME

ED 340 449 JC 920 062

TITLE The Role of Community Colleges in Economic Development. An Overview of the University of Kentucky Community College System, Part Four.
INSTITUTION Kentucky Univ., Lexington. Community Coll. System.
PUB DATE 89
NOTE 70p.; In its: "Overview of the Community College System," prepared for the Commission to Study the Future of the Community Colleges in Kentucky, p107-167, 1989 (JC 920 058).
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Adult Education; *College Planning; College Role; Community Colleges; *Economic Development; Educational Legislation; Educational Trends; *Futures (of Society); Industrial Training; Inservice Education; Institutional Mission; Job Skills; Job Training; Labor Economics; Labor Force Development; *Program Descriptions; Program Development; Retraining; *Role of Education; *School Business Relationship; Two Year Colleges; Vocational Education
IDENTIFIERS Kentucky; *University of Kentucky Community College System

ABSTRACT

The Commission to Study the Future of Community Colleges in Kentucky was established in 1988 to review the accomplishments of the Kentucky Community College System (KCCS) and to provide direction for the KCCS towards the year 2000. Developed as part of a collection of reports on the KCCS for use by the Commission, this two-part report reviews the current national economic situation, the special role of community colleges in economic development, and examines issues of economic development specific to Kentucky and the KCCS. Part 1 begins with a review of future research pointing to the need for national economic development policies and activities, and related educational programs. Next, an examination of the role of community colleges is presented, which includes a review of technology transfer; exemplary economic development programs at two-year colleges nationwide; tech-prep/associate degree programs; and a summary of recommendations from special commissions and policy boards. Part 2 focuses on issues of economic development for Kentucky and activities involving the KCCS and its programs. Following a review of the recommendations from a statewide coalition of business, government, and education leaders, part 2 reviews economic development efforts of the KCCS including the preparation of skilled workers, training/retraining for business and industry, advanced technology training, service to the agricultural and coal industries, services to small businesses, and pre-professional programs. A list of discussion questions for the Commission, a graphical analysis report of economic development issues in Kentucky, and a copy of educational legislation relating to tech-prep programs are included. (PAA)

ED340449

THE ROLE OF COMMUNITY COLLEGES IN ECONOMIC DEVELOPMENT

An Overview of the University of Kentucky Community College System

Part Four

Prepared for
The Commission to Study the Future of the
Community Colleges in Kentucky

U.S. DEPARTMENT OF EDUCATION
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Community College System
University of Kentucky

1988-89

JC 920 062

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COMMUNITY COLLEGE SYSTEM
UNIVERSITY OF KENTUCKY

"Commission to Study the Future of Community Colleges in Kentucky"

"Toward the Year 2000"

Charge of Duties

Purpose:

In celebration of the 25th Anniversary of the Community College System, a Commission has been established to study the accomplishments of the System, assess its current status, and provide direction looking toward the year 2000. Commission members are involved in shaping the future for the Community Colleges in Kentucky. The Commission established is an official Commission of the University of Kentucky Community College System.

Timeline:

It is anticipated that the Commission will accomplish its work during the 1988-89 academic year. Meeting periods are as listed below:

October 31 - November 1, 1988	October 31 - Marriott, Lexington 6:30 p.m. Reception 7:00 p.m. Dinner 8:00 p.m. Meeting November 1 - Marriott, Lexington 8:30 a.m. - Noon -- Meeting
December 15 - 16, 1988	_____
February/March, 1989	_____
April, 1989	_____

THE ROLE OF COMMUNITY COLLEGES
IN
ECONOMIC DEVELOPMENT

- - - - -

THE NATIONAL PICTURE

Toward 2000: Work, Workers, Education

Hudson Institute, a research organization which specializes in the analysis of policy problems and the formulation of policy options for government and private sector clients, received a grant from the Employment and Training Administration of the U.S. Department of Labor to conduct research on a Workforce 2000 project. The resulting book, Workforce 2000, which reflects the authors' study and not necessarily the views of the U.S. Department of Labor, provides a forecast of work and workers for the 21st Century. The Assistant Secretary of Labor points out in the foreword that forecasting is not an exact science, but that many of the changes reshaping the economy and society are powerful, long-term trends that can be projected with some confidence.

Johnston in Workforce 2000 writes that "Four key trends will shape the last years of the twentieth century."

1. The American economy should grow at relatively healthy pace, boosted by a rebound in U.S. exports, renewed productivity growth, and a strong world economy.

2. Despite its international comeback, U.S. manufacturing will be a much smaller share of the economy in the year 2000 than it is today. Service industries will create all of the new jobs, and most of the new wealth, over the next 13 years.

3. The work force will grow slowly, becoming older, more female, and more disadvantaged. Only 15 percent of the new entrants to the

labor force over the next 13 years will be native white males, compared to 47 percent in that category today.

4. The new jobs in service industries will demand much higher skill levels than the jobs of today. Very few new jobs will be created for those who cannot read, follow directions, and use mathematics. Ironically, the demographic trends in the work force, coupled with the higher skill requirements of the economy, will lead to both higher and lower unemployment: more joblessness among the least-skilled and less among the most educationally advantaged (xiii).

In view of these trends, policymakers will be challenged to find ways to:

1. Stimulate balanced world growth.

2. Accelerate productivity increases in service industries. (Service industries being health, education, trade, finance, insurance, real estate, and government)

3. Maintain the dynamism of an aging work force.

4. Reconcile the conflicting needs of women, work, and families.

5. Integrate black and hispanic workers fully into the economy.

6. Improve the educational preparation of all workers (Johnston 105-106).

Education is directly or indirectly involved in all of the challenges to the policymakers. Education must not only improve the educational preparation of all workers--including the aging, the females with childcare responsibilities, the minorities, the disadvantaged, etc.,--it must find ways to increase the speed and quality of its own output. Given the current population that is attracted to the community colleges and the open access mission of these institutions, it appears obvious that a large part of the responsibility of the education and training will rest with community colleges.

Johnston points out many of the changes that will occur as a result of the shift to service industries. Changes will occur in location, hours, and structure of work so that the customer is satisfied. The typical work place

in the future will have fewer people and the work week will be shorter, with more people employed part-time. Wages may become less equally distributed, with more high and low earners and fewer earners in the middle.

According to Johnston, the five important demographic facts in the year 2000 will be (1) "The population and work force will grow more slowly than at any time since the 1930s; (2) The average age of the population and the work force will rise, and the pool of young workers entering the labor market will shrink; (3) More women will enter the work force; (4) Minorities will be a larger share of new entrants into the labor force; and (5) Immigrants will represent the largest share of the increase in the population and the work force since the first World War" (75-76). By the year 2000, the U.S. population will reach 275 million, an increase of 15 percent over the 240 million figure in 1985 (76).

"The fastest-growing jobs will be in professional, technical, and sales fields requiring the highest education and skill levels (xxi)." To illustrate the rising requirements more dramatically, Johnston ranks jobs according to skills rather than education. The ratings are assigned to jobs according to the math, language, and reasoning skills requirements. Only 27 percent of all new jobs fall into the lowest two skill categories. Currently, 40 percent of the jobs require these limited skills. Forty-one percent of the new jobs will be in the three highest skill groups, compared to 24 percent of the current jobs (xxi).

When the changes in the composition of the future work force are compared with the future job market, the need for education and training is apparent. It has been estimated that approximately 75 percent of the work force in the year 2000 is currently in the work force. In order to staff remaining and new positions, we will need not only young adults reaching working age, but many

of the currently unemployed adults. For example, the current welfare recipients (including AFDC, food stamps, etc.) represent a pool of potential employees. Welfare reform ("workfare") will address this potential pool of workers, and community colleges will play a major role in providing the education and training needed by these individuals. With welfare reform, states now have the option of allowing welfare clients to take college courses to meet their job training requirements. The bill signed by President Reagan emphasizes basic education, job training and work experience to help welfare parents secure and keep jobs. This represents the first major overhaul of the aid to Families with Dependent children program since its beginning.

Educational standards must be raised. Johnston believes national standards and nationally comparable tests are essential in education and that new investments are needed in educational technology. In three educational areas--training for the work place, remedial education, and higher education--Johnston says that "competition is likely to spur more rapid implementation of advanced technologies and much more rapid gains" (69). Successful methods used outside the public schools will accelerate the adoption of advanced technologies in the educational system.

The Economic Development Triangle

"The Development Triangle: Community College Assistance for Economic Growth," a report prepared by Ian McNett of the Northeast-Midwest Institute, a private, nonprofit organization devoted to research on issues of regional concern, urges educators and elected officials to help expand the number and quality of joint college-development agency efforts. Recommendations are provided for community college administration, development agencies and business leaders. The entire report is included at the end of this section, but some highlights are presented in the following paragraphs.

McNett points out that economic development requires participation from (1) private sector businesses and financiers, (2) public and private economic development agencies and groups, and (3) resource institutions and organizations. Together, these three groups of participants form an "economic development triangle," and the triangle serves as a catalyst for economic development. Community colleges are resource institutions and thus are a part of the triangle. Community colleges have a stake in economic development.

The Role of Community College in Economic Development

Nationally, community colleges play an active role in economic development within their respective communities, regions, and states. They provide training, retraining, and technical assistance to business and industry as well as assistance and information to economic development groups. In addition to these services, "Many state and local economic development groups and business associations have tapped the colleges' capacity to provide other kinds of services--foreign trade assistance, economic surveys, data base maintenance, and support services such as use of facilities, equipment, consulting, and data management systems" (3). States are realizing that community colleges offer many economic development advantages--e.g. location, ties with the local community. McNett states that "Illinois, Iowa, Wisconsin, and North and South Carolina have found that the practical orientation of two-year colleges offers a way to focus economic development efforts at the local level, across the state" (3). Additionally, community colleges are flexible and can operate on short time frames for course and service development, faculty are committed to involvement in continuing education and community service, the use of practitioners as instructors is encouraged, and the colleges' resources, including libraries and computers are useful in development activities.

In return, the colleges receive more students, jobs for their graduates, support from the community, and a stronger tax base to support their operations. McNett recommends that community colleges be involved early in the strategic planning process so that planning agencies are aware of the services the colleges can provide. In North Carolina, college representatives and economic development officials sit on each other's boards. "In Illinois, the Carolinas, Wisconsin, and Iowa, the two-year colleges' role is spelled out in legislation" (5).

In areas experiencing economic growth, the community colleges are involved in economic development and are promoted as a resource for business and industry. In South Carolina and New Jersey, two-year colleges are on the planned tours for business executives exploring location site possibilities. This permits the executives to learn about resources the college has to assist in meeting training and other needs. "The Economic Development Group for Volusia/Flagler Counties (Florida) has an office at the Daytona Beach Community College's Research and Business Center" (7).

Service to Small Businesses

For many businesses, but particularly small and medium-sized businesses, McNett reports that nationally, two-year colleges are becoming "convenience stores". Services provided by the community colleges to these businesses include training, assistance with management, planning, data processing, marketing, and contract procurement. The local community orientation of the colleges make them accessible to local citizens and less intimidating for people involved in small businesses.

The Illinois Community College Board has directed that the state's community colleges become providers of entrepreneurship training. In 1985, the 38 community college districts in Illinois offered workshops and seminars

attended by 19,034 small business owners. The Illinois colleges' economic development program includes a network of business assistance centers, similar to department stores, in all 38 community college districts. In Ohio, Stark Technical College offers the "Thursday College for the Small Business Owners" which includes courses in how to start or manage a small business. Most of the courses offered are taught by small business owners. Mercer County Community College in New Jersey assists businesses in the development of foreign trade contacts and opportunities.

Technology Transfer

McNett reports that community colleges on a national basis are involved in "technology transfer," the application of new technologies to industry operations and processes. Through training, applied research, education, and demonstrations, community colleges can help business and industry integrate new technologies into their operations. Economic development agencies help the colleges acquire the state-of-the-art equipment and operating funds needed and then guide industry to the colleges with the high-technology programs. Businesses can work with the colleges to create the programs needed by industry.

"General Motors has called on two-year colleges to provide technological training for its workers in Michigan, in Delaware, and at its new Saturn plant in Tennessee" (19). Ohio has created and funded high-technology centers at the community colleges. The program addresses major problems such as obsolescent manufacturing plants, the migration of jobs to other states, and the decrease in manufacturing jobs. Advanced Technology Centers have been established at Lorain County Community College (Elyria, Ohio) and Cuyahoga Community College (Cleveland). The legislature voted $5.4 million to construct the first center which includes sections which house robotics, a computer integrated

manufacturing laboratory, microelectronics, and computer-aided design and manufacturing. Manufacturers donate equipment to the center as it helps market their products and trains potential employees. Lorain County Community College has a technology-sharing relationship with Cincinnati-Milicron. The company has donated robotic equipment to the center and uses college facilities to demonstrate equipment to customers and to train company sales and service representatives and purchasers.

The Cuyahoga Community College's Technology Center was funded with $8.5 million in 1983. Senior executives from local firms provide guidance for the Center's programs. The Center features a telecommunications center with satellite links, a media resources library, and laboratories designed for fields ranging from manufacturing to laser electro-optics. Community colleges are also involved in assisting small and medium-sized organizations to apply computer, teleconferencing, laser, and robotics technology to their businesses.

According to McNett, state legislation defines in general terms the role of two-year colleges in the economic development process, but it is the informal interaction and the understanding of respective roles, that generate cooperation among the components of the triangle. Some states have integrated the community colleges into their economic development triangle as full partners. Other states have left the partnerships to develop on a local or regional basis in an informal way. Overall, training is the most common type of business assistance supplied by the colleges. In 1985, in a survey of 770 two-year colleges conducted by the American Association of Community and Junior Colleges, almost 75 percent provided some type of training for large businesses, labor unions, small firms, and public-sector employers (25). The three types of training being general, customized, and entrepreneurial.

As technology changes rapidly, companies must update techniques and this creates a need for training and retraining. Community colleges are responding through tailored continuing education courses or regular credit courses. McNett points out that there are advantages to all members of the triangle. Colleges benefit by ensuring that the training offered is current and applicable to today's needs; businesses avoid duplicating what the colleges can do. The partnerships usually result in economies of scale.

Training-The Key

McNett writes that the availability of training is one of "the most important factors businesses weigh in their location decisions" (26). Economic development executives and legislators are encouraged to explore the part that two-year colleges can play in the economic development process. North Carolina and South Carolina have involved two-year colleges as a central element in their development efforts since the early 1960s. "In North Carolina, fifty-eight community colleges, technical colleges, and technical institutes provide state-sponsored customized industrial training services to all new and expanding businesses" (26). Norton Simon, Inc., a Fortune 500 firm, established its Max Factor cosmetic manufacturing operation in North Carolina, and Vance-Granville Community College trained 280 employees. The skills taught ranged from chemical compounding to set-up mechanics. Former Governor James Hunt (North Carolina) said "that the two-year colleges are the backbone of the economy and the single most important element in the state's program of economic development."

In South Carolina, training is offered at no cost to employers through 16 Special Schools created by an act of the legislature. This is an incentive offered to new industry and business locating in South Carolina or to expanding businesses and industries. Industries have invested $17.6 billion

in South Carolina and created 330,000 new jobs since the program began. South Carolina economic development officials have stated that it will be necessary to ensure that two-year colleges can provide a supply of trained technicians in order to attract new industry (27).

McNett encourages state policymakers to conduct a comprehensive assessment of the training capacity in the educational institutions and to make increased investments where gaps exist. Innovative funding approaches for the two year college programs were discussed by McNett. These approaches include generating financing through the new jobs created, grants from a quasi-public corporation matched by dollars from corporations participating in training, and a state payroll-based tax which funds the state employment training panel.

Benefits For All

The economic development triangle partnership results in major benefits to all partners and to the community and state--additional resources, incentives for businesses, additions to the tax base, more jobs, up-to-date training, access to technology, placement of two-year graduates, and a skilled work force are only a few of the benefits. In conclusion, McNett says that community colleges have a proven track record in contributing to economic development and should be utilized.

Other Exemplary Programs

In addition to the programs described by McNett, there are numerous other noteworthy community college economic development programs as small businesses and Fortune 500 companies throughout the country are discovering how cost-effective it is to join in a partnership with local community colleges for the development of human resources through training and retraining.

The American Association of Community and Junior Colleges and the Association of Community College Trustees, through the jointly-sponsored Keeping America Working Project, sponsor the Community College/Employer/Labor Partnership Awards. The awards program is designed to stimulate awareness of the variety of cooperative arrangements that exist between community colleges and employers or labor unions and to foster the development of new partnerships to support economic and human development in communities across the nation. In 1988, the State of Illinois was recognized and honored for its statewide initiative in the area of economic development partnership. The cornerstone of the partnership was the establishment of a Statewide Business Center Network at all 39 community college districts. A $2,934,000 funding package was established for the network by the state legislature. The prime mission is to provide a local vehicle for job creation, retention, training and retraining. Portland Community College (Oregon) was honored for its partnership with Tektronix, Inc. for training in electronics and machine tool technology. Portland Community College delivers all education and training and Tektronix provides the facilities and equipment. Lexington Community College (LCC) (Kentucky) received "honorable mention" in the national Keeping America Working Partnership Awards program for the exemplary partnership with IBM. This LCC/IBM partnership was described as being an excellent example of the positive ripple effect generated by a good partnership. The relationship began with the establishment of a Maintenance Operators Technical Training School (MOTTS), which trains IBM equipment maintenance personnel and permits them to earn credits toward an Associate in Applied Science Degree. The program has led to other programs in Industrial/Electrical Technology and Statistical Process Control. MOTTS and SPC classes are now open to smaller businesses in the area.

At the 1987 annual conference of the National Council for Occupational Education, the focus was on the role of the community, junior and technical college in preparing the nation's work force for the challenges of today and the future. Community colleges were recognized for exemplary partnerships with business and industry for occupational training, community impact, and human or economic resource development. Illinois Central College, East Peoria, Illinois, was recognized at the conference for its partnership with Caterpillar, Incorporated. The college provides customized training for new employees and training to upgrade the skills of existing staff. Caterpillar, Inc. supports the college through donation of equipment, tuition and fee reimbursement, and professional expertise. Also honored were Indian River Community College, Fort Pierce, Florida, and Dyersburg State Community College, Dyersburg, Tennessee. Indian River Community College was honored for successfully implementing an 80-hour training program in cooperation with Grumman Aerospace Corporation to provide aircraft/airplane technicians in an area with one of the lowest unemployment rates in the state. Dyersburg State Community College worked closely with Dyer County Area Chamber of Commerce in the establishment of a new industry automation training program.

Piedmont Technical College in Greenwood, South Carolina, provides 42 associate degree, diploma, and certificate level programs, which have been developed on the basis of industry's needs for graduates and are discontinued when the need no longer exists. Through the college's Continuing Education Services, a wide range of short-term training is provided. A Conference Center is located on the college campus devoted exclusively to the provision of facilities for industrial training. The "Special Schools Program" includes working with new or expanding industries to train a work force to meet start-up or expansion needs. It offers no-cost pre-employment training for a

company's specific needs. The process includes (1) the industry announcing its plans, (2) the special schools personnel determining training requirements and developing a program, recruiting and training a work force during plant construction, and (3) the plant doors opening with the newly trained work force prepared for work.

Two other components of the Piedmont Technical College include the Industrial Philanthropy, and the Robotics Resource Center. Cincinnati-Milacron, a major manufacturer of industrial robots, donated robotics systems valued in the hundreds of thousands of dollars to support development of the Robotics Resource Center. The Warner Lamber Foundation recently donated $100,000 to the college's endowment to enhance the scholarship program. The Robotics Resource Center for the college is designated as the state's Robotics Resource Center by the State Board for Technical and Comprehensive Education. The college is thus responsible for providing necessary training to meet the needs of industry in robotics and other methods of automated manufacturing. This includes both the direct training of industry personnel and the training of faculty in other educational institutions. Under the auspices of the Robotics Resource Center, the college has developed a two-year associate degree curriculum in Automated Manufacturing Technology (Prewett).

Similar programs exist at Greenville Technical College in Greenville, South Carolina. The president of the college reports that the Special Schools Program has brought into South Carolina industries such as Cincinnati Milacron, Digital Equipment, General Dynamics, General Electric, Rockwell, Walmart, Mack Trucks, 3-M, etc. (Barton). Other economic development activities at Greenville Technical College include a partnership with Michelin Tire Corporation which resulted in the company building and equipping a 15,805

square foot facility on the campus which is used jointly by Michelin and the college. This partnership won the "Keeping America Working" award from the American Association of Community and Junior Colleges. The cost of building and equipment was approximately $2 million. A partnership with ComputerVision of Massachusetts resulted in that manufacturer installing computer-aided drafting and design equipment valued at $1.5 million in a college laboratory, making it the most sophisticated CAD laboratory in any technical college on the east coast.

The North Carolina Community College system operates 40 small business centers throughout its 58-campus system. The services provided through the centers are at low or no direct cost to the small business person. The centers provide one-on-one counseling and referral services through cooperation with the University Small Business and Technology Development Center. A variety of topics on the "how to's" of business and the psychological aspects of running a business are presented by persons in the field.

Literature received from the North Carolina Community College System in November, 1988, states that more than half of the Fortune 500 companies now have at least one manufacturing plant in North Carolina, and that these new companies consistently cite the N.C. Community College System's proven ability to train workers for jobs in new industries as one of their primary reasons for locating there.

Technology Transfer service has been added to South Carolina's Technical Colleges. This service provides access to technical information data bases for the purposes of solving problems in business and industries. The services provide decision makers with current information on marketing, management, engineering, and thousands of other topics. The S.C. Technical Education

System is affiliated with a seven-state network headquartered in Florida known as the NASA Southern Technology Applications Center. The Technical Colleges in S. C. coordinate the delivery of the services in South Carolina.

Kirkwood Community College (Iowa) is meeting technical training needs for the global community by providing technical training for agriculture students from Central America. The students are taught English and then mainstreamed into agriculture courses at the community college.

Tech-Prep/Associate Degree Program for Economic Development

The Tech-Prep/Associate Degree program was hailed by the American Association of Community and Junior Colleges' Futures Commission as one of the best partnership models for high schools and community colleges for the purpose of providing tech-prep education. The term "tech-prep education program" is used to mean a combined secondary and postsecondary program which leads to an associate degree. It was examined by Congress as Representative William Ford (D-MI) introduced H.R. 5290, the "Tech-Prep Education Act," (copy attached) which would have established a matching grant program designed to develop more tech-prep/associate degree programs by secondary school/community college consortia (Parnell 2). When Ford introduced the bill he told his fellow members of Congress that "the greatest threat to our future economic security ... is unskilled workers." "It is imperative that high schools and community colleges work together in developing and implementing educational programs that will serve the greatest number of Americans" (Parnell 2,3). Congress did not pass the bill this session, but Ford plans to introduce it again in 1989.

Colleges in North Carolina, Oregon, New York and other states have already made the tech-prep/associate degree model a success. The Mt. Hood Regional Cooperative Consortium includes Mt. Hood (Oregon) Community College,

seven secondary school districts, Private Industry Council (JTPA), and the Oregon Department of Education. Community and business involvement was infused in the development of all consortium activities and work experience sites were developed. Other developments resulting from the consortium include the donation of equipment and faculty professional development opportunities. Business and industry have made a commitment to assist with the development of a qualified work force. The 2 + 2 Tech Prep Mission adopted at Mt. Hood Community College is described below:

1. A planned sequence of classes in grades 11-14 (2 years in high school + 2 years at Mt. Hood Community College).

2. The opportunity to receive Mt. Hood Community College credit for skills and knowledge learned in high school.

3. The opportunity to shorten the time necessary to earn an associate degree.

4. The opportunity to pursue more advanced course work at MHCC because prerequisite skills were learned in high school.

5. A connected high school/MHCC program that will prepare people for high-demand careers (Kreider).

Dr. Kreider, President of Mt. Hood Community College District, stated, "An emerging focus is to expand the 2 + 2 prep concept into a 2 + 2 + 2 program. For example, discussion is currently underway to connect the 2 + 2 hospitality-tourism tech prep program with the bachelor degree program at Portland State University."

Recommendations from Commissions and Policy Boards

Commissions and policy boards are going on record with recommendations involving the community colleges in economic development.

The Appalachian Regional Commission, established by Congress in 1965 to promote economic opportunity in the Appalachian region, commissioned the consulting and research firm SRI International to assess the current strengths

and weaknesses as they pertain to economic change and to make recommendations regarding economic development activities. The report stated that attention must be given to a "new economic infrastructure," based on technology development, human resources, and capital investment. The recommendation was made that "The region's well-developed system of two-year community and technical colleges should adapt their programs to meet industry's growing demand for more broadly skilled "new technicians" who are adaptable to change and capable of being retrained. In addition adult literacy training needs to be strengthened and expanded" (10).

The report published by the Appalachian Regional Commission also listed action opportunities in the area of human resources. These included keeping education a top-level priority and preventing the "brain-drain" through maintaining quality of life factors in the communities (14).

The Southern Growth Policies Board, comprised of twelve states (Kentucky being one of the twelve) and Puerto Rico, was created by southern governors for the purpose of regional planning and public-private partnership building. It is often referred to as the "think tank" on economic development issues. The Board impanelled a group called the Commission on the Future of the South to establish a statement of regional objectives for the Board to address during the next six years. The 1986 Commission report, Halfway Home and a Long Way to Go, (report attached) was adopted by the full Board of Directors of the Southern Growth Policies Board. Two of the ten specific objectives adopted by the Commission were to "Increase the economic development role of higher education" and to "Implement new economic development strategies aimed at home-grown business and industry" (8). The Commission believes interdependence and not competition is needed between the colleges and the private sector. Business has the right and obligation to work with colleges

on the rapid-changing needs of the work place. Both should be concerned with developing an environment where everyone can flourish. In the past, it was extension programs that brought modern ideas to farming. Now innovation and technology must be brought to home-grown business and industry.

The Southern Growth Policies Board also suggests that since good vocational education is expensive, schools can avoid duplicating programs by permitting 11th and 12th graders to take courses at the two-year school. It states that increasing responsibility for job-specific training will fall on two-year post secondary schools. In view of this, the responsibility for federal vocational education funds should rest with a strong community college system in those states that have them.

THE STATE'S PICTURE

Work, Workers, and Education

Project 21 Advisory Board, a statewide coalition of business, government and education leaders with a mission of preparing the state for the next century, in its report describes the jobs and workers in Kentucky's future. For jobs, the state will have to rely less on manufacturing, mining and farming and more on the multi-dimensional service economy. Small businesses now supply many jobs, with 97 percent of the business firms in the state currently having fewer than 100 employees. Both small businesses and larger corporations are a key to the state's economic growth. Kentucky has a low labor force participation rate, with 72 percent of the adult working age population currently either working or looking for work. Thus, a large number of potential workers are not generating any labor income. Of those looking for jobs, about 9.5 percent in 1985 were unable to find work. Of the Kentuckians working, many are working in declining industries. Employers for the future high-skill level service industries will require more educated, flexible and versatile employees; and as the educational levels of Kentuckians fall below regional and national benchmarks, future jobs may go to other states.

Regarding education, the Project 21 Advisory Board reports that "The importance of education to the economy of the world may be at an all-time high. Today, more than ever, economic development is irrevocably linked to an educated populace" (6). Further, the Board states that "education in the Commonwealth is the single most important challenge to our economic development in the 21st century" (6). The Board listed three trends in

education that have the greatest potential for influencing the economy. These are listed below:

1. A new emphasis on mastering basic skills like thinking, communicating, reading and computing.
2. New delivery systems such as computer-assisted learning and growing involvement by private enterprise in the educational system.
3. A new emphasis on life-long learning. (6)

The situation in Kentucky as reported by Project 21 is that nearly 30 percent of Kentuckians are illiterate, 31 percent of adults completed less than eight grades of school, and Kentucky has one of the lowest percentages of high school and college-educated adults in the nation.

Within Kentucky, projections are that by the year 2000 there will be a higher proportion of people age 55 and over than the nation overall and women will comprise over half of this group. In the future, Kentucky is expected to have a modest increase in the numbers of immigrants over the current one thousand or fewer per year. The increase will come from foreign investors and the recruitment of foreign technical experts.

Project 21 established six objectives for Kentucky as the turn of the century approaches. The six objectives are:

1. Eradicate the low educational attainment of our population;
2. Optimize the dollars spent on education.
3. Enhance our political culture.
4. Mobilize resources for addressing our declining industries.
5. Increase the adaptability of our work force.
6. Capitalize upon our central location. (14)

Kentucky can also be described as the state which ranks:

1. 50th in adults with high school diplomas.
2. 49th in college graduates in the population.

3. 50th in engineers and Ph.D. scientists in the work force.

4. 1st in adult illiteracy.

5. 46th in college attendance.

6. 5th in unemployment.

7. 48th in spending for education.

8. 43rd in voter participation.

A section entitled, "The Environment" from the Strategic Plan for Higher Education in Kentucky points out that the deficiencies in education and economics are interrelated. "It matters not whether Kentucky is a poor state because its population is not well-educated or Kentucky's population is not well-educated because Kentucky is a poor state. Both statements are probably true. Kentucky is increasingly becoming a national educational aberration. To continue the 'chicken and egg' argument will only discourage taking necessary action" (20). The need for education for the work force was also pointed out, as 70 to 75 percent of the present work force will be in the work force in 2000 and programs for retraining adults for new jobs must be emphasized. "Community colleges, including those on the university campuses, must be in the forefront in support of high educational and economic attainment" (29).

"Predictions about future economic trends and their educational implications in Kentucky were presented at a meeting of the Shakertown Roundtable at Pleasant Hill, April, 1985. Among these were the following:

1. By the year 2000 it will become the norm to require two or three years of postsecondary schooling in a changed job market.

2. By the year 2000 Kentucky will have to create 348,000 new jobs. Probably 90 percent of the workers for these new jobs will have to have at least two years of technical education, or equivalent postsecondary schooling.

3. Site searchers for industries now ask, before anything else, about the quality of the school system, about the technical schools, and about the quality and participation of higher education.

4. Most of the high tech industries are able to operate in cities of 20,000 or less, making it possible for many communities in Kentucky to participate. But they must have the right kind of workers.

5. The educational background of many, if not most, Kentucky workers makes them suitable only for jobs that are dying out. It is not too late to change this, but it will mean a firm commitment to quality K-12 education, quality and appropriate technical education, and good colleges and universities that want to work with industry.

6. Statistics show that Kentucky ranks among the lowest in its K-12 program--so low that nine out of ten site searchers would write off Kentucky now, even though other indicators might make Kentucky an attractive prospect for many industries.

7. Kentucky should aim at the industries that fit the growth patterns, and that are almost invariably education intensive. Kentucky has a lot going for it, but it all depends on education" (Council 47,48).

A brief paper on economic development issues in the state was written by two professors in the Department of Agricultural Economics at the University of Kentucky. The paper includes graphics presented in such a fashion that the association between education and economic development is clear. See pages 147-151 for a copy of the paper.

Kentucky Community Colleges: Economic Development Activities

Consistent with the mission and goals of the Community College System as specified in KRS 164.580 and the Community College System policy statement (AR II-5.0-1) adopted by the University of Kentucky Board of Trustees in 1964 and revised in 1971, the System is committed to working with business and industry to meet their training needs and thus enhance the state's economic development efforts. The colleges are serving business and industry by providing quality training of a general or specific nature, support services, and various business courses and workshops. The System has developed guidelines and procedures regarding training programs for business and industry.

In recent years the colleges have increased the offerings geared specifically toward economic development. These economic development offerings and services are in response to needs in the communities and the desire of the communities to bolster their economies. The involvement of the community colleges in economic development has evolved within the continuing education components of the colleges. Recently, one of the colleges compiled figures to describe continuing education trends in the 80's regarding business and industry continuing education activities as contrasted with other offerings in community education. As measured by budget and CEU's, business and industry noncredit education now dominates the continuing education program. Similar trends can be found at all of Kentucky's community colleges.

The colleges follow the System guidelines and procedures established and yet operate in an autonomous manner with the course offerings and services provided being dependent upon the availability of resources at the colleges, the needs of the communities, and the size and scope of the activity. Some of the colleges are able to respond in a broader scope than others.

In some areas, representatives of the colleges are involved in working with the staffs of local economic development organizations--industrial foundations, vocational schools, chambers of commerce, professional management associations, local government community/development offices, Private Industry Councils, economic development commissions, etc.--in planning for training needs among area industries and developing training experiences designed to meet those needs. Colleges assist with labor surveys, coordinating training for new industries, conducting pre-employment testing, etc.

Many of the college presidents, business/industry liaison staff members, and continuing education coordinators are members of local Chambers of Commerce, Private Industry Councils, and Economic Development Councils.

Preparation of Skilled Technicians

One of the colleges' primary roles in economic development is through the offering of technical and semi-professional programs, one of the functions of the threefold mission. The objectives of the technical programs are (1) to meet the manpower requirements of the community and surrounding region through two-year technical/occupational programs which provide preparation for immediate employment, and in some cases, qualify the graduate for advanced entry into a baccalaureate program; (2) to provide opportunities for individuals already employed to upgrade skills, and/or acquire the background required to gain certification; (3) to provide support for other community college programs; and (4) to meet the needs of students by providing them with the background required for certification or registration in a particular profession.

The programs are composed of about one-half general education courses (written and oral communication, mathematics, biological or physical science, humanities or history, and social or behavioral science) and the other half technical education. The Associate in Applied Science Degree is awarded upon completion of the curriculum. The career/occupational programs, with available options, are listed on Page 152. The specific career programs offered by the individual community colleges differ because the educational program of each college reflects the local needs. Career programs listed by college appear on Pages 153 and 154. Program descriptions and course requirements for each technical program are included in the Community College System Catalog, beginning on page 37.

New technical programs created and implemented must be relevant to the community college mission and the System's long-range instructional plan, and must be in response to institutional, local, regional or state needs. Methods

by which technical program needs are determined depend upon the examination of several kinds of data--i.e. demographic information, economic indicators, national, state, and local business and industry needs surveys, and pending state and federal legislation that may produce mandates for particular training programs. Any new program must have clearly defined objectives and exit competencies with the courses to be used in developing the identified competencies. The program curriculum must comply with standards of any appropriate accrediting body or certifying agency. Additionally, the employment prospects for graduates must be described, a method of evaluating the program must be developed, and duplication of similar programs within the service area must be avoided. The facilities, equipment, and resources required to offer the new program must be identified.

Table Nos. 10, 11, 12, and 13, Pages 155, 156, 157, and 158 show the number of graduates by technical program for the past four years. During the last academic year, 1987-88, 1,526 students earned an Associate in Applied Science Degree (Career Programs). This represents 62.5 percent of the total number of graduates (2,442). Since 1984, the total number of technical graduates has remained fairly constant, ranging from a high in 1983-84 of 1,739 to a low in 1986-87 of 1,519. Technical program reviews are conducted periodically by the Community College System to ensure that program graduates are obtaining employment in the fields for which they were trained.

Training/Retraining for Business and Industry

As business and industry focus on building and maintaining a competitive advantage by incorporating today's technological advances into the work place, training and retraining of workers will continue as an economic imperative. The community colleges are responding to this need by working with agencies such as the Bluegrass State Skills Corporation, the Appalachian Regional

Commission, the Kentucky Department of Commerce, Kentucky Department for Employment Services, Eastern Kentucky Concentrated Employment Program, and Private Industry Councils, as well as local business/industry representatives.

The Community College System attempts to be sensitive to manpower trends by making appropriate modifications in both credit courses within the technical programs and noncredit program offerings through continuing education. Additionally, customized training courses are developed and implemented through continuing education in response to specific requests. Thus, training/retraining is provided by the colleges as a part of two of the functions of the mission--technical programs and adult education. Training/retraining services are provided at the colleges' facilities as well as on business/industrial sites.

Business/industry liaison personnel have been employed in the Continuing Education component at 12 of the 14 colleges. In 1989, a Coordinator for Business and Industry Services will be employed in the Community College System office. This staff person will primarily be responsible for coordinating efforts in the community colleges throughout the state to provide educational programming to meet the needs of local, regional or statewide business and industry. This person will also coordinate systemwide/statewide training programs and will serve as the community college liaison with the Economic Development Cabinet, Bluegrass State Skills Corporation and the Office of Vocational Education. The Coordinator will identify target groups for training in conjunction with business and industry leaders, local governmental agencies, and statewide agencies to promote economic development. Other duties include the analysis of labor market information to identify new program directions for continuing education/community service programs, and

the preparation of grants and contracts for programs with statewide and regional emphasis.

The training provided by the community colleges spans from entry level to advanced skills training and includes pre-employment training, entry level training, occupational upgrade training, advanced training, professional development, and train-the-trainer training. Training projects for the various colleges in cooperation with the Bluegrass State Skills Corporation include the following:

1. Upgrade training in supervision skills for Appalachian Computer Service, Inc.
2. Education and skills training within the Kentucky River Area Development District of southeast Kentucky under an Appalachian Regional Commission Grant.
3. Upgrade training in electrical skills for Arch Mineral of Kentucky.
4. Upgrade training in computer math, digital techniques, and basic computers for Armco.
5. SPC skills upgrade program for Buckhorn Material Handling Group.
6. Skills upgrade training in cabinet making for Columbus Show Case Company.
7. Skills training in design of experiment for Dayton Walther Corporation.
8. Advanced skills training for Kentucky Society for Mine Safety Instructors.

Other companies served through community college/Bluegrass State Skills training projects include Palm Beach Company, Philip Morris, Gates Rubber Company, Budd Company, Rand McNally, and Tecumseh.

Many of the colleges have been extremely successful in providing training in Statistical Process Control, a means to analyze and alter a production process to ensure that the product conforms to its predetermined standards, thus fostering high quality. SPC uses sound management principles and applies

simple statistical techniques to production processes. An SPC Training Program covers 40 to 54 hours, depending on client needs. Companies served include Florida Tile, Proctor and Gamble, Rand McNally, Webster Electric, Gates Rubber Company, National Magnetec, Buckhorn Corporation, Ford, and Philip Morris.

Other current training programs/courses are the Maintenance Operators Technical Training School (MOTTS), Blueprint Reading, Basic Hydraulics, Tooling, Machining, First Line/First-Time Supervisors, Technical Writing, and Instructor Training. Many times a skills assessment must be done and remedial education provided prior to the offering of the training requested by the company.

One of the colleges responded to a request from industry which resulted in the development and delivery of a three-year training curriculum for the company employees over a lengthy period of time. Initially, a team of three company officials and four college faculty and staff met to determine curriculum content. Visits and interviews with potential providers of training components, a plant-wide basic skill and training interest survey and review of various instructional materials were among the planners' tasks. The second year, Bluegrass State Skills Corporation joined the partnership to assist with funding delivery of some of the training curriculum.

Another one of the community colleges is a major provider of courses for the Appliance Park University certificate programs at General Electric. The same college established an enrichment center on site at Ford Motor Company. One full-time faculty member is assigned to coordinate activities at the center. The company has provided a new area to be used by the center and other training programs.

Five western Kentucky community colleges will sponsor the Mid-America Automotive Symposium in April, 1989. The conference will be held at Lake Barkley Resort and targets current and potential automotive suppliers in Kentucky and contiguous states. The project is being funded by the Community College System, Bluegrass State Skills Corporation, and the Kentucky Economic Development Cabinet and the Tourism Cabinet.

Advanced Technology Training

Technological developments such as computers, micro-electronics, and robots have brought about significant changes in manufacturing. These developments combined with machine tools and systems provide the advanced technology basis for manufacturing. Functions previously performed by different individuals can be combined into a set of connected functions performed by one person. The complex systems include many different devices--electrical, electronic, mechanical, pneumatic, hydraulic, thermal, and optic. With the continual changes in technology leading to more sophisticated systems, workers need a broader educational base in science and mathematics than in the past. Additionally, as pointed out by Dr. Stephen Roush, Logan Aluminum, at the Governor's Council on Vocational Education meeting in May, 1988, workers need behavioral skills in addition to the technology skills. Workers need knowledges and skills permitting adaptability, flexibility, and team building. As indicated in Workforce 2000, the new jobs will demand higher skill levels. Community college level education and training is needed for the advanced technology fields.

Each technical program offered in the community colleges includes about one-half general education courses including mathematics, biological or physical science, written and oral communication, and social or behavioral science. The other half of the curriculum is technical education. Thus,

these programs are excellent educational resources for individuals preparing not only for the present but also for the future technical work force.

In order to remain competitive, industries in Kentucky have already implemented advanced technology systems and they will continue to do so. Business and Industry Liaisons at the community colleges are increasingly receiving requests from manufacturers throughout the state for introductory and advanced training in Programmable Logic Controllers (P.L.C), Computer Numerical Controllers (C.N.C.), and Computer Assisted Design (C.A.D). During the spring of 1988, nine community colleges surveyed thirty-six companies throughout the Commonwealth to determine the statewide urgency and need for training in the above technologies. Thirty-three of the companies surveyed were currently utilizing Programmable Logic Controllers in the manufacturing of products, and twenty-six responded that P.L.C. training is urgently needed at both the conceptual and in-depth levels. Additionally, one-third of those surveyed responded that training on C.N.C. controlled devices with C.A.D. linkage for design is also urgently needed. From those companies interviewed, it was found that 441 individuals would be enrolled at the expense of their employers if this training were available. The type of employee needing the training includes technicians, managers, engineers, maintenance personnel, and electricians. Also, from the needs assessment it was found that the demand for P.L.C./C.N.C./C.A.D. training will increase during the next several years.

Inadequate resources have prevented the community colleges from responding to these training needs, but in an effort to respond to the deficiency in advanced technology education and training in the state, the Community College System has submitted a proposal to the Bluegrass State Skills Corporation for a mobile training program which would permit training in these three technologies. The mobile concept would allow training to occur

at any of the community college campuses, vocational education schools, or at industry sites. If funded, curriculum for each training program will be developed to meet the specific needs of the company requesting the training. The mobile program will be scheduled through the Community College System office. Additionally, a train-the-trainer project will train faculty throughout the states' community colleges and vocational schools. These faculty will then conduct the needs assessments and share in the planning and development of curricula which will meet the needs of each specific industry. At present no other program or projects of this type and scope are available in the state. The on-site statewide delivery of instruction in these technologies will position the state to better attract and retain these high growth industries.

Service to the Agriculture Industry

The agriculture industry is a very important part of the state's economy. According to Dr. David L. Debertin, Professor of Agricultural Economics, University of Kentucky, in 1987, the gross farm income for Kentucky was about $2.95 billion. This income was derived from the following enterprises: tobacco (19 percent), horses (15 percent), cattle (13 percent), dairy (10 percent), corn (7 percent), soybeans (6 percent), and other enterprises (30 percent). Other enterprises include horticultural crops and other work activities--i.e. custom harvesting.

There are approximately 99,000 farms in the state. The current number of full-time employees in agriculture is about 69,000; however, this does not include agribusiness employment or does it include employment in other businesses that sell to farmers. Agribusiness is the sector which sells inputs to farmers and purchases farmers' products.

Clearly, community colleges have a role to play in economic development in both the service industry and manufacturing industry. A similar, but different issue, is the role community colleges can play in the agriculture industry. There are critical problems in rural America. For example, "the economic competitiveness of rural areas is declining;" "rural families and communities are having difficulty adjusting to the impact of political, economic, and social change;" and "rural revitalization depends on skilled community leadership" (Infanger 10).

Infanger, Department of Agricultural Economics, University of Kentucky, stated in a recent article that researchers for the U.S. Department of Agriculture have divided U.S. counties into three groups. These groups are (1) "farming dependent, a county where 20 percent or more of local labor and proprietor income is from farming, (2) farming important, a county where 10-19 percent of local labor and proprietor income is from farming, and (3) not-farming dependent, those counties where farm income accounts for less than 10 percent of local labor and proprietor income" (12).

There are 514 counties in the farming dependent category in the U.S., with 19 of those counties being in Kentucky. The 19 farming dependent counties in the state are Adair, Bath, Bourbon, Bracken, Casey, Cumberland, Green, Hart, Henry, Menifee, Metcalfe, Nicholas, Owen, Owsley, Robertson, Scott, Trimble, Washington, and Woodford (12).

Kentucky also has 24 counties in the farming important category. These counties are Anderson, Breckinridge, Clinton, Edmonson, Elliot, Fayette, Fleming, Gallatin, Garrard, Grant, Hickman, Jackson, Jessamine, Lewis, Lincoln, Logan, Monroe, Morgan, Oldham, Pendleton, Rockcastle, Russell, Spencer, and Wolfe. Manufacturing income is larger than farm income in these

counties. For the remaining 77 counties in the state, income from the service industry and manufacturing provides the bulk of income (12).

The 43 counties in the state in the farming dependent or farming important categories are in the service areas of nine community colleges. Continuing education and training activities at the fourteen community colleges geared specifically toward the agriculture industry are few in number. Community colleges have played a very important role, however, in providing opportunities for rural youth to enroll in college and pursue degrees in agriculture by taking the first two years at a community college. The broad area of rural development through educational programs tailored for the development of human resources, management of land, and management of water resources may be educational areas appropriate for community colleges, especially those located in areas with farming dependent counties. Community colleges in these areas must be a part of a collaborative effort between the cooperative extension system, four-year institutions, federal and state agencies, and county governments.

Service to the Coal Industry

Kentucky is the largest coal producing state in the U.S. and the coal industry is an important part of the state's economy. It makes a direct and indirect impact on the earnings of Kentucky residents as well as contributes to state tax revenues. Thirty-four million, seven hundred sixty-five thousand tons of the black gold were produced by Kentuckians in 1987. And because of intense pressure from domestic and foreign competitors, it was done with fewer men and women.

A study to determine the impact of coal on the Kentucky economy was commissioned by the Kentucky Coal Association, the Eastern Kentucky Coal Association and the Western Kentucky Coal Association. The report from the

study, published in 1985, indicates that in 1983 personal income in Kentucky's coal industry was estimated to be $1,290 million. Almost one-half (43.8 percent) of Kentucky coal revenues were paid directly and indirectly (wages and benefits) to miners in the state (Coal 1).

The impact is greater than the direct contribution to earnings. The indirect economic effects are statewide as many of the expenditures are for items not produced within the coal regions. Supplies, maintenance, parts, etc., are purchased from dealers and manufacturers throughout the state. About 22.8 percent of the coal industry's revenue in 1983 was used for these types of expenditures (Coal 1).

In the 1983-84 fiscal year, the coal industry contributed about 18.7 percent of the state's total revenue in the General and Transportation Funds (Coal 4).

Several of the community colleges offer education and training tailored for the coal industry. An example is the college which has established a training program with Arch Mineral Corporation, Lynch District. Employment in this particular college's service area is about 75 percent mine related. The college provides training in electricity and hydraulics, with three phases of training devoted to each of the topics. The training is provided to 120 maintenance personnel, in groups of 10. The groups meet on campus for two weeks (80 clock hours) of education and training. The program is being partially funded through Bluegrass State Skills Corporation. It is considered to be an innovative program for the coal mining industry.

Another program is the safety training/retraining program offered by the community college for Arch Mineral Corporation. The training is required by state and federal law, and about 1,000 employees of Arch Mineral are trained annually by the college. The length of the training course is eight clock

hours. Last year Arch Mineral's Mine 32 was judged to be the safest in the nation. This model safety training program will be used at other mines in the college's service area beginning in December.

A different college offers a mining program under the umbrella of the Business and Industry Technical Assistance Center (BITAC) at the college. The program is a vehicle to deliver up-to-date information and training to the coal industry. In cooperation with many individuals the Mining Program has sponsored the following seminars: (1) Annual Surface Mining Law Updates, (2) Beefing Up the Bottom Line (Tax Workshop), (3) Introduction to Computers for Professionals, (4) Computing for Engineers, (5) Computing for Managers, and (6) Surface Subsidence. There are also several seminars scheduled for Spring, 1989.

Another service to the coal industry is the Associate in Applied Science Degree Program in Mining Technology which is offered at two of the community colleges. One of the colleges works closely with Island Creek Coal Company through the Associate Degree program. Many of the company's full-time employees have completed or are pursuing the two-year degree. Island Creek Coal Company has given the college equipment for the coal analysis lab. The company also gives the college funds for scholarships for students majoring in Mining Technology and provides field trip experiences and cooperative education positions for students. The college's Mining Technology Program Advisory Committee is actively involved in the vocational school's mining program, the community college's two-year program, and a regional university's four-year mining program. Committee membership includes representatives from the public secondary schools, vocational school, the community college, the regional university, and the local mining industry. The joint Advisory Committee facilitates the coordination of the 2 + 2 + 2 program. Students can

complete the mining courses at the vocational school, articulate to the community college, and upon completion of the Associate Degree program in Mining Technology, transfer to the four-year program at Murray State University.

Services to Small Businesses

The services provided to small businesses include the delivery of information and counseling to owners and operators of small retail and service businesses as well as to individuals planning to start new businesses. The assistance may be in the form of specialized continuing education workshops, regular credit course offerings, or consultations in the areas of management, supervision, computer applications, state and federal taxes.

Inservice training relative to Entrepreneurship Education has been provided by the colleges through grants funded by Kentucky Vocational Education. Other grants from Kentucky Vocational Education have permitted small research projects on characteristics of entrepreneurship education participants.

An "Entrepreneurial Institute" opened this fall at one of the colleges. The Institute is an intensive training program that will endeavor to teach future small business entrepreneurs what they need to know about starting their own businesses. It is a four-week program consisting of consecutive six-hour Saturday sessions.

Several of the colleges have small business resource centers which are designed to serve the needs of small businesses and stimulate economic growth within their respective service areas by providing management and technical assistance, counseling, training, information dissemination, and applied research. All of the colleges have access to the services provided by the Kentucky Small Business Development Center (SBDC) Program located in the

University of Kentucky's College of Business and Economics. One community college operates a SBDC outreach center as part of this University of Kentucky program.

BITAC, (Business and Industry Technical Assistance Center) is considered a model center. BITAC is designed to focus on the formation and retention of small businesses and existing businesses, and prospective businesses can also obtain assistance. BITAC has two model programs that have received national attention. These are (1) the Dislocated Workers Program which provides entrance training for unemployed workers, and (2) the Rural Women's Proprietorship Project which provides assistance to business women and prospective business women in the rural environment. Both of these programs have been recognized by the Midwest Research Institute as model programs. BITAC also administers a mining technology program which was described in the "Service to the Coal Industry" section.

The personal computer workshops consisting of short, intensive hands-on training sessions on how to use personal computers and business software for increased on-the-job productivity are popular offerings for small business owners and larger businesses and industries. These offerings are also popular with individuals as personal enrichment courses. Some of the colleges provide workshop participants access to a free help hotline for additional support after the training session is completed. Topics included in the "computer productivity training" are DOS applications, Data Base Management, Spreadsheets, Desktop Publishing, CADKEY, AutoCAD, and word processing.

Pre-Professional Programs

Another role for community colleges in economic development is providing two years of transfer work toward baccalaureate degrees in professional programs. Students attend the community colleges for two years and then

transfer to four-year institutions and major in Agriculture, Allied Health Professions, Business and Economics, Engineering, pre-Medicine, Education, Pharmacy, pre-Dentistry, pre-Law, pre-Veterinary, etc.

COMMUNITY COLLEGE SYSTEM
UNIVERSITY OF KENTUCKY

"Commission to Study the Future of Community Colleges in Kentucky"

"Toward the Year 2000"

ECONOMIC DEVELOPMENT ROLE - For Discussion:

1. As we approach the year 2000, what will be the education demands businesses and industries will place on workers? What kinds of skills should they have?

2. What should the Community College System be doing in the way of associate degree programs--developing new ones, modifying or cancelling present ones?
   If new ones need to be developed, what kinds?
   If programs need to be modified or cancelled, which ones?

3. Business Centers, on-campus offices for coordinating and synchronizing the community college's economic development efforts and business services are located on many community college campuses across the country. Should the "Business Center Concept" be implemented on a systematized basis at the community colleges?

4. What emphasis should the community colleges place on training/retraining programs for business and industry?

5. What should be the community college role in advanced technology training in Kentucky?

6. Should Advanced Technology Centers equipped with robotics hardware and computer-assisted design and computer-assisted manufacturing systems be established at any of the community colleges?

7. What should be the community college role in rural development in Kentucky?

8. Should the community colleges place major emphasis on developing a statewide tech/prep associate degree program in partnership with secondary schools?

9. What emphasis should community colleges place on educating technicians for the healthcare industry in Kentucky?

10. What role should community colleges play in economic development in Kentucky in the year 2000?

11. Should faculty-industrial exchange programs be developed to enhance and facilitate program development and faculty development opportunities? If so, how should such programs be structured?

12. How can the community colleges work more closely with government agencies, private sector, and other educational institutions in assisting with human resources and training needs for economic development over the mid-to-long range?

13. The community colleges in Kentucky are attempting to play a major role in economic development at the local and state levels. How can their effectiveness be increased?

14. Can the Associate Degree in Applied Science be a "quality assurance" for business and industry?

KENTUCKY ECONOMIC DEVELOPMENT ISSUES: A GRAPHICAL ANALYSIS

Jerry R. Skees and Louis E. Swanson
Associate Professors

Questions regarding the patterns of economic development in Kentucky have received increased attention in recent years. There has been much talk regarding the golden triangle of Kentucky -- that region which is within the geographical area surrounded by Louisville, Lexington, and Northern Kentucky. It is also well recognized that the eastern and southeastern regions of the state are the most disadvantaged.

This brief paper presents basic data by county within the state in order to demonstrate the patterns of development. Most importantly, the graphics are presented in such a fashion that the association between education and economic development will be abundantly clear. Rather than present a host of statistical information, the approach is to use basic measures to divided the state into three equal regions using that measure. Thus, the graphics provide easy inspection to determine counties within the state that are within the lower one third, middle one third, and upper one third for each measure. The pattern for shading counties is altered so that the worst conditions are presented in dark shades. The altering occurs because in some case the higher values indicate improvement (such as education) and in some case higher values indicate problems (such as unemployment). Most of the data are from the 1980 census (the most recent census). However, recent data are presented in order to demonstrate that patterns have not changed significantly.

A LOOK AT COUNTY DATA

Figure 1 presents the educational level for Kentucky counties. The lower one third indicates counties where only 25 to 38 percent of the adults over 25 years of age had completed high school in 1980. The contiguous pattern clearly shows that eastern and southcentral counties have the lowest levels of education. The upper one third indicates counties where 50 to 72 percent of the adults had high school degrees. In this case, all metropolitan counties are included as are many of the counties which are contiguous to a metropolitan county. The strip between Lexington and Louisville clearly stands out as does the far western Kentucky counties.

Kentucky Essential Skills Tests data for Kentucky county elementary and secondary school districts (city and private schools are excluded) are presented in Figure 2. Though this data is for 1987 (eight years after the data presented in figure 1) and the data represent a totally different educational variable, the patterns for figure 1 and 2 are strikingly similar. Once again eastern Kentucky school systems remain in the lower one third. Also the metropolitan school systems generally appear in the upper one third.

The 1980 poverty level is depicted in Figure 3. In this case, the counties with the highest percent of their population below the poverty level (20 to 41 percent) are also in eastern and southeastern Kentucky. The lowest one third had poverty levels of 5 to 14

percent in 1980. With the exception of a few counties, the map in figure 3 and figure 1 are shaded identically. This underscores the relationship between education levels and poverty.

Figure 4 presents the official unemployment statistics for 1980. Once again the patterns are familiar. However, there are differences. The golden triangle is more complete (i.e., there are more counties which fall into the best grouping). This suggests the role that commuting plays in employment opportunities. Several western Kentucky counties appear in the worst grouping indicating the lack of economic opportunities in these counties.

Figure 5 presents the percent of population employed in the service sector. Service sector jobs are generally lower paying than manufacturing jobs. The patterns are somewhat similar to those maps presented above. However, the associations are not as strong. The associations reappear in figure 6 – median family income in 1980. The lowest set of counties are nearly identical to the lowest set of counties displaying educational attainment. In the lowest set of counties median county income levels are between $9,084 and $16,190. The highest set of counties have median county income levels between $19,897 and 28,730.

In considering issues of economic development, the property tax base can influence local services such as education. Thus, Figure 7 presents the per capita property tax base for 1980. In the lowest one third, the base ranges from $31 to $80. The upper one third ranges from $127 to $232. There is a good deal of overlap between this figure and Figures 1 and 2. These associations demonstrate a relationship between education and local tax base.

Finally, figure 8 presents 1986 data on the discouraged worker rate. Discouraged workers are individuals who do not appear in the official unemployment statistics. In the case of unemployment statistics only those individuals who have actively sought employment in the previous six weeks are included. Thus, in remote (rural) areas where employment opportunities are rare, individuals who may be willing to work but have become discouraged because there are no jobs would be excluded from unemployment statistics. In short, unemployment statistics tend to underrepresent the true unemployment rate in non-metropolitan areas. Further, discouraged workers are not an insignificant number. In fact, in 1986 discouraged workers outnumbered those listed as officially unemployed. Therefore, the discouraged worker statistics for 1986 are included. Figure 8 differs from Figure 4 (unemployment) in that more of the remote (rural) counties appear in the upper one third. This supports the notion that unemployment statistics underrepresent the true situation in rural counties.

An important area which has the lowest level of discouraged workers is the set of southcentral counties. These counties have been heavily influenced by the influx of the automobile assembly plants in the Nashville, Tennessee area.

Some Conclusions

A few conclusions are apparent. First, the association between education and economic well-being in Kentucky counties is unmistakable. Counties with higher educational attainment tend to have lower poverty, lower unemployment, fewer discouraged workers, higher incomes, and relatively less employment in the service sector. Second, the educational level of the population within a county is associated with educational

performance measures within the school. This association tends to hold despite the fact the data presented in Figures 1 and 2 are for two different points in time. Third, those areas which have a higher local tax base (as measured by per capita property tax) will have lower levels of education and performance in their educational systems. Finally, the data presented also highlight the distinct differences between Kentucky's metropolitan counties and the non-metropolitan counties.

Despite the strong association between education and economic well-being a word of caution is advised. The cause and effect is not clear. Does educational level improve the economic conditions or does an improvement in economic activity lead to improved educational levels? As economic activity improves one would expect to attract and retain more highly educated individuals. In addition, improved economic activity will also help finance improvements in local educational system. The education and economic development association flows both ways. Education can enhance economic development, but as development occurs one would expect the educational level and system within a county to improve.

Still, the economic development literature is clear – without improvements in education the local areas in the state which are currently underdeveloped stand little chance of attracting desirable industries and enhancing economic development. Further, given the expected rapid pace of change in the future, education will play a major role in the ability of individuals to make adjustments to changing economic conditions. An issue that must be addressed is the effect of changing business cycles on the local funding of education. Given the importance of education in adapting to economic change, it is simply unacceptable to allow national and local business cycles to influence the funding of education.

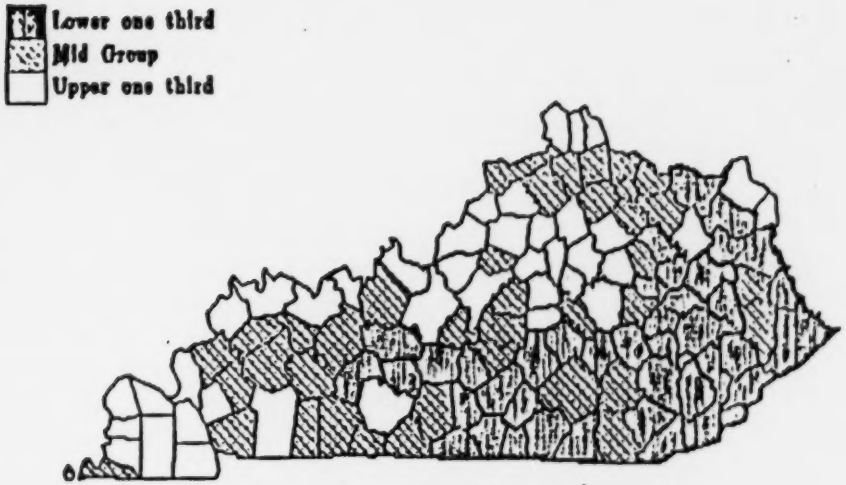

Figure 1: Educational Level -- 1980
Percent of Adults with 12 years or more

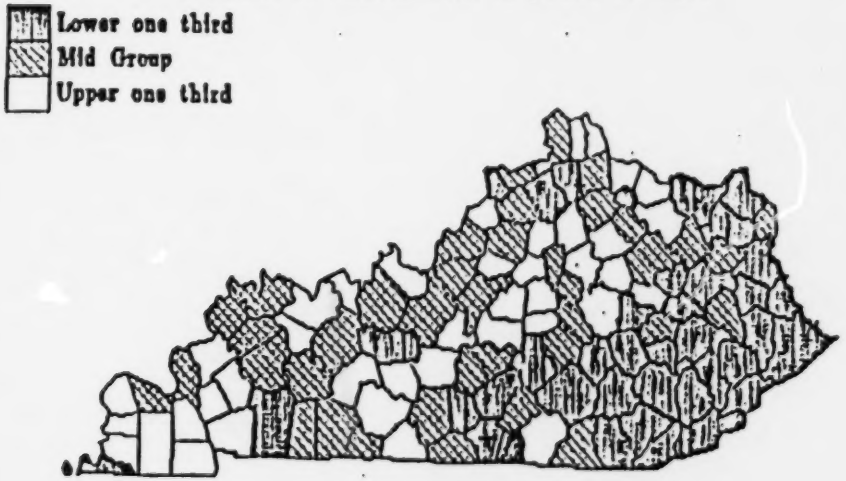

Figure 2: Educational Test Scores -1987

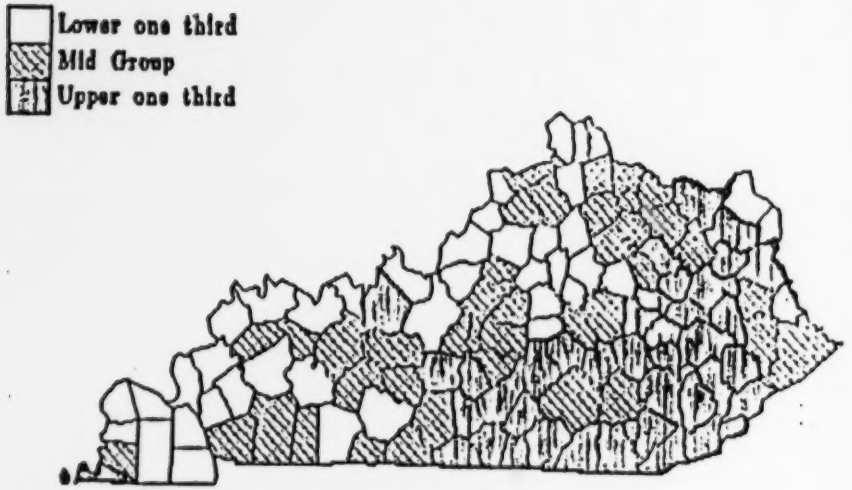

Figure 3: Poverty Level -- 1980
Percent of Population Below Poverty Level

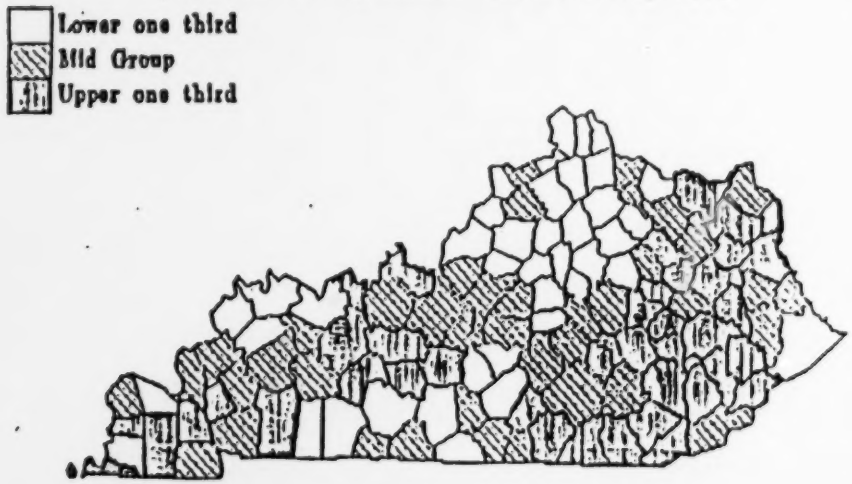

Figure 4: Unemployment Rate -- 1980
Percent of Population Unemployed

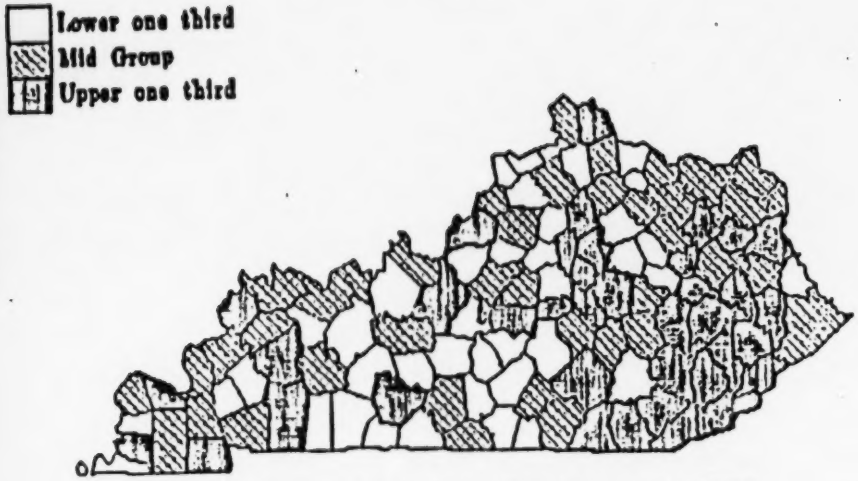

Figure 5: Service Sector Employment - 1980

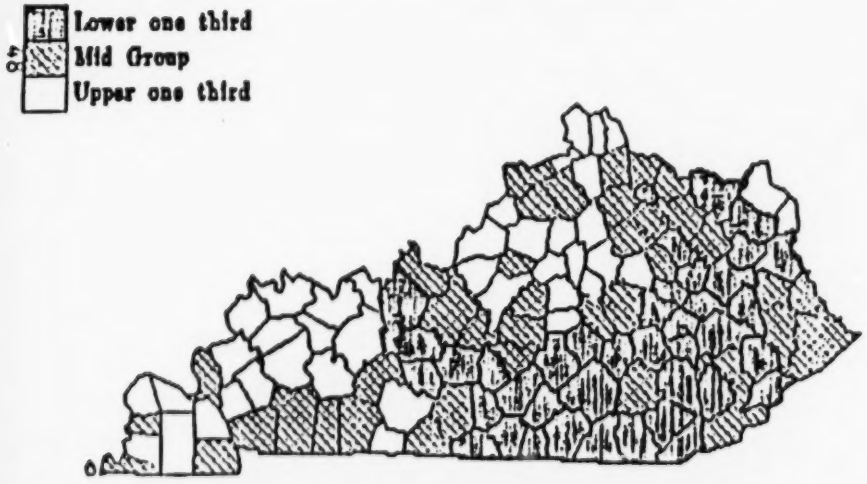

Figure 6: Median Family Income -- 1980

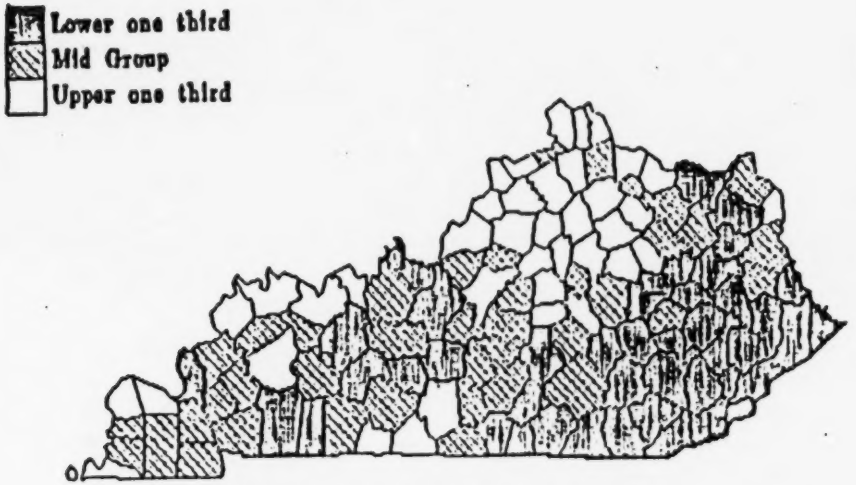

Figure 7: Per Capita Property Tax

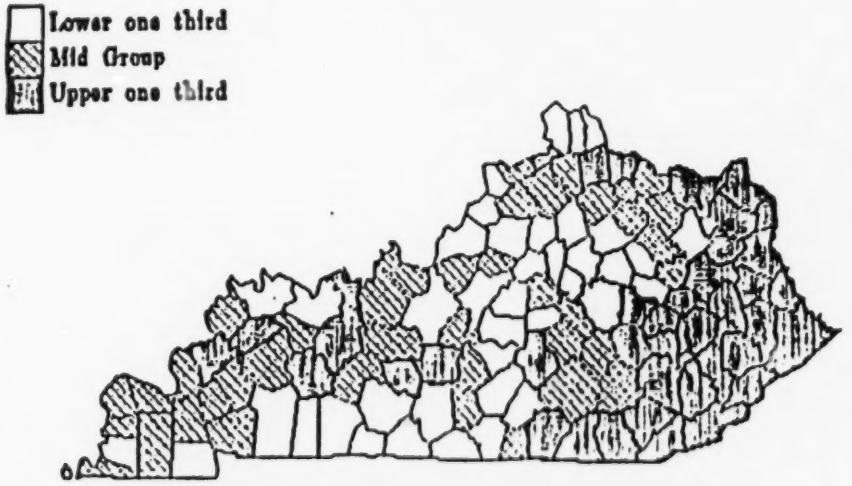

Figure 8: Discouraged Worker Rate -- 1986

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COMMUNITY COLLEGE SYSTEM
UNIVERSITY OF KENTUCKY
Career Programs 1988-89

Accounting Technology

Architectural Technology

Biomedical Equipment Technician

Business Technology
- Agri-Business Option
- Banking Option
- Management Option
- Management Information Systems Option
- Real Estate Management Option
- Retail Option
- Retail Marketing Option
- Transportation Option

Commercial Art Technology
- Advertising Option
- Photography Option

Communications Technology

Culinary Arts

Data Processing Technology

Dental Hygiene

Dental Laboratory Technician

Early Childhood Education

Engineering Technology
- Computer Repair Option
- Electrical Option
- Mechanical Option

Fire Science Technology

Human Services

Industrial-Electrical Technology

Laser Optics Technician

Law Enforcement Technology

Medical Laboratory Technician

Mining Technology

Nuclear Medicine Technology

Associate Degree Nursing

Office Administration

Physical Therapist Assistant

Radiologic Technology

Real Estate

Reclamation Technology

Respiratory Care

Community College System
University of Kentucky
Career Programs 1988-1989

Ashland Community College
Accounting Technology
Business Technology
- Banking Option
- Management Option
- Management Information Systems Option
- Real Estate Management Option

Data Processing Technology
Associate Degree Nursing
Office Administration

Elizabethtown Community College
Business Technology
- Banking Option
- Management Option
- Real Estate Management Option

Data Processing Technology
Associate Degree Nursing
Office Administration

Hazard Community College
Business Technology
- Management Option
- Management Information Systems Option

Associate Degree Nursing (Offered by Southeast Community College)
Office Administration

Henderson Community College
Business Technology
- Management Option

Communications Technology
Data Processing Technology
Human Services
Medical Laboratory Technician
Associate Degree Nursing
Office Administration

Hopkinsville Community College
Business Technology
- Banking Option
- Management Option
- Management Information Systems Option

Human Services
Law Enforcement Technology
Associate Degree Nursing *
Office Administration

Jefferson Community College
Accounting Technology
Business Technology
- Management Option

Commercial Art Technology
- Advertising Option
- Photography Option

Culinary Arts
Data Processing Technology
Early Childhood Education
Engineering Technology
- Electrical Option

Fire Science Technology
Human Services
Industrial-Electrical Technology
Medical Laboratory Technician
Associate Degree Nursing
Office Administration
Physical Therapist Assistant
Real Estate
Respiratory Care

Lexington Community College
Accounting Technology
Architectural Technology
Business Technology
- Management Option
- Retail Marketing Option
- Transportation Option

Data Processing Technology
Dental Hygiene
Dental Laboratory Technology
Engineering Technology
- Electrical Option
- Mechanical Option

Nuclear Medicine Technology
Associate Degree Nursing
Office Administration
Radiologic Technology
Real Estate
Respiratory Care

Community College System
University of Kentucky
Career Programs 1988-1989

Madisonville Community College
Accounting Technology
Biomedical Equipment Technician
Business Technology
- Banking Option
- Management Option
- Real Estate Management Option
- Retail Marketing Option

Data Processing Technology
Engineering Technology
- Electrical Option
- Mechancial Option

Laser Optics Technician
Mining Technology
Associate Degree Nursing*
Office Administration
Radiologic Technology
Reclamation Technology
Respiratory Care

Maysville Community College
Business Technology
- Agri-business Option
- Management Option
- Management Information Systems Option
- Retail Marketing Option

Dental Hygiene
Industrial-Electrical Technology
Associate Degree Nursing
Office Administration

Owensboro Community College
Business Technology
- Management Option

Data Processing Technology
Office Administration

*Pennyrile Regional Associate Degree Nursing Program

Paducah Community College
Accounting Technology
Business Technology
- Banking Option
- Management Option
- Real Estate Management Option
- Retail Marketing Option

Communications Technology
Data Processing Technology
Associate Degree Nursing
Office Administration
Physical Therapist Assistant

Prestonsburg Community College
Accounting Technology
Business Technology
- Management Option
- Real Estate Management Option

Associate Degree Nursing

Somerset Community College
Business Technology
- Banking Option
- Management Option

Data Processing Technology
Medical Laboratory Technician
Associate Degree Nursing
Office Administration
Physical Therapist Assistant

Southeast Community College
Business Technology
- Management Option
- Management Information Systems Option

Dental Hygiene
Engineering Technology
- Computer Repair Option

Mining Technology
Associate Degree Nursing
Office Administration

10/88mj

CHART 10

COMMUNITY COLLEGE SYSTEM
NUMBER OF GRADUATES BY TECHNICAL PROGRAM
FOR SELECTED YEARS

ALLIED HEALTH AND NURSING

TECHNICAL PROGRAM	1986-87	1985-86	1984-85	1983-84
ADMINISTRATIVE MEDICAL ASST.	**	3	4	10
BIOMEDICAL EQUIPMENT	3	0	0	0
DENTAL HYGIENE	29	26	16	23
DENTAL LABORATORY TECHNICIAN	14	17	15	18
MEDICAL LABORATORY TECHNICIAN	15	32	36	38
NUCLEAR MEDICINE TECHNOLOGY	4	3	6	8
ASSOCIATE DEGREE NURSING	448	502	532	563
PHYSICAL THERAPIST ASSISTANT	25	16	16	16
RADIOLOGIC TECHNOLOGY	21	18	18	14
RESPIRATORY CARE	32	36	31	34
TOTALS	591	653	674	724

**PROGRAM INACTIVE

CHART 11

COMMUNITY COLLEGE SYSTEM
NUMBER OF GRADUATES BY TECHNICAL PROGRAM
FOR SELECTED YEARS

BUSINESS AND RELATED TECHNOLOGIES

TECHNICAL PROGRAM	1986-87	1985-86	1984-85	1983-84
ACCOUNTING TECHNOLOGY	81	94	81	72
BUSINESS TECHNOLOGY (8 OPTIONS)	327	341	330	303
DATA PROCESSING TECHNOLOGY	127	153	198	198
OFFICE ADMINISTRATION	149	185	162	169
REAL ESTATE	12	10	13	13
TOTALS	696	783	784	755

CHART 12

COMMUNITY COLLEGE SYSTEM
NUMBER OF GRADUATES BY TECHNICAL PROGRAM
FOR SELECTED YEARS

ENGINEERING AND RELATED TECHNOLOGIES

TECHNICAL PROGRAM	1986-87	1985-86	1984-85	1983-84
ARCHITECTURAL TECHNOLOGY	26	18	21	30
ENGINEERING TECHNOLOGY (3 OPTIONS)	47	53	53	65
FOREST AND WOOD TECHNOLOGY	**	**	**	1
INDUSTRIAL-ELECTRICAL TECHNOLOGY	13	19	12	15
MINING TECHNOLOGY	9	13	27	16
RECLAMATION TECHNOLOGY	2	1	3	8
TOTALS	97	104	116	135

**PROGRAM INACTIVE

CHART 13

COMMUNITY COLLEGE SYSTEM
NUMBER OF GRADUATES BY TECHNICAL PROGRAM
FOR SELECTED YEARS

OTHER TECHNICAL PROGRAMS

TECHNICAL PROGRAM	1986-87	1985-86	1984-85	1983-84
COMMERCIAL ART TECHNOLOGY (2 OPTIONS)	11	20	13	18
COMMUNICATIONS TECHNOLOGY	26	14	22	23
CULINARY ARTS	11	10	17	6
EARLY CHILDHOOD EDUCATION	16	29	18	23
FIRE SCIENCE TECHNOLOGY	4	5	1	2
HUMAN SERVICES (3 OPTIONS)	5	49	40	45
LASER OPTICS TECHNICIAN	*			
LAW ENFORCEMENT TECHNOLOGY	12	14	6	4
LIBRARY TECHNOLOGY	**	**	**	1
RECREATION LEADERSHIP TECH	**	**	1	1
SPECIAL EDUCATION ASSISTANT	**	**	**	1
VOCATIONAL TEACHER	**	**	**	1
TOTALS	135	141	118	125

*PROGRAM IMPLEMENTED IN 1987

**PROGRAM INACTIVE

100TH CONGRESS
2D SESSION

H. R. 5290

To establish a program of grants to consortia of local educational agencies and community colleges for purposes of providing tech-prep education.

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 14, 1988

Mr. FORD of Michigan introduced the following bill; which was referred to the Committee on Education and Labor

---

A BILL

To establish a program of grants to consortia of local educational agencies and community colleges for purposes of providing tech-prep education.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Tech-Prep Education Act".

SEC. 2. FINDINGS AND PURPOSE.

(a) FINDINGS.—The Congress makes the following findings:

(1) Rapid technological advances and global economic competition demand increased levels of skilled

technical education preparation and readiness on the part of youths entering the work force.

(2) Effective strategies reaching beyond the boundaries of traditional schooling are necessary to provide early and sustained intervention by parents, teachers, and educational institutions in the lives of students.

(3) A combination of nontraditional school-to-work technical education programs, using state of the art equipment and appropriate technologies, will reduce the dropout rate for high school students in the United States and will produce youths who are mature, responsible, and motivated to build good lives for themselves.

(4) The establishment of systematic technical education articulation agreements between secondary schools and community colleges is necessary for providing youths with skills in the liberal and practical arts and in basic academics and with the intense technical preparation necessary for finding a position in a changing workplace.

(5) By the year 2000 an estimated 15 million manufacturing jobs will require more advanced technical skills, and an equal number of service jobs will become obsolete.

(6) More than 50 percent of jobs that are currently developing will require skills greater than those currently provided by existing educational programs.

(7) Dropout rates in urban schools are currently 50 percent or higher, and more than 50 percent of all Hispanic youth drop out of high school.

(8) Each year, as a result of 1 million youths dropping out of high school with inadequate preparation to enter the workforce, the United States loses $240 billion in earnings and taxes.

(9) Employers in the United States pay an estimated $210 billion annually for formal and informal training, remediation, and in lost productivity as a result of untrained and unprepared youth joining, or attempting to join, the workforce of the United States.

(b) PURPOSE.—It is the purpose of this Act—

(1) to provide planning and demonstration grants to consortia of local educational agencies and community colleges, for the development and operation of 4-year programs designed to provide a tech-prep education program leading to an associate degree for youths; and

(2) to provide, in a systematic manner, strong, comprehensive links between secondary schools and community colleges.

SEC. 3. PROGRAM AUTHORIZED.

(a) GENERAL AUTHORITY.—The Secretary of Education shall make grants to pay the Federal share of the cost of activities carried out under this Act to consortia of—

(1) local educational agencies or area vocational schools serving secondary school students; and

(2) community colleges (including postsecondary vocational technical schools).

(b) AMOUNTS OF GRANTS.—

(1) FEDERAL SHARE.—The Federal share of the cost of any activity carried out with assistance under this Act may not exceed—

(A) for the first year that a grant is received, 100 percent of such cost with respect to planning purposes;

(B) for the second year that a grant is received, 80 percent of such cost with respect to implementation and operation;

(C) for the third year that a grant is received, 70 percent of such cost with respect to operation;

(D) for the fourth year that a grant is received, 60 percent of such cost with respect to operation; and

(E) for the fifth year that a grant is received, 50 percent of such cost with respect to operation.

SEC. 4. TECH-PREP EDUCATION PROGRAMS.

(a) GENERAL AUTHORITY.—Each grant recipient shall use amounts provided under the grant to develop and operate a 4-year tech-prep education program.

(b) CONTENTS OF PROGRAM.—Any such program shall—

(1) be carried out under an articulation agreement between the participants in the consortium;

(2) consist of the 2 years of secondary school preceding graduation and 2 years of higher education, with a common core of required proficiency in mathematics, science, communications and technologies designed to lead to an associate degree in a specific career field;

(3) include the development of tech-prep education program curriculum appropriate to the needs of the consortium participants; and

(4) include in-service training for teachers that—

(A) is designed to train teachers to implement effectively tech-prep education curriculum;

(B) provides for joint training for teachers from all participants in the consortium; and

(C) may provide such training in weekend, evening and summer sessions, institutes or workshops.

(c) ADDITIONAL AUTHORIZED ACTIVITIES.—Any such program may—

(1) provide for training programs for counselors designed to enable counselors more effectively to recruit students for tech-prep education programs, ensure their successful completion of such programs and their placement in appropriate employment; and

(2) provide for the acquisition of tech-prep education program equipment.

SEC. 5. APPLICATIONS.

(a) IN GENERAL.—Each consortium that desires to receive a grant under this section shall submit an application to the Secretary at such time and in such manner as the Secretary shall prescribe.

(b) FIVE-YEAR PLAN.—Each application submitted under this subsection shall contain a 5-year plan for the development and implementation of activities under this Act.

(c) APPROVAL.—The Secretary shall approve applications based on their potential to create an effective tech-prep education program as provided for in section 4.

(d) SPECIAL CONSIDERATION.—The Secretary shall give special consideration to applications which—

(1) provide for effective employment placement activities or transfer of students to four-year baccalaureate degree programs;

(2) demonstrate commitment to continue the program after the termination of assistance under this Act; and

(3) are developed in consultation with business, industry and labor unions.

(e) EQUITABLE DISTRIBUTION OF ASSISTANCE.—In making grants, the Secretary shall ensure an equitable distribution of assistance among the States and among a cross section of urban and rural consortium participants.

SEC. 6. REPORTS.

Each grant recipient shall, with respect to assistance received under this Act, submit to the Secretary such reports as may be required by the Secretary to ensure that such grant recipient is complying with the requirements of this Act.

SEC. 7. DEFINITIONS.

For purposes of this Act:

(1) The term "articulation agreement" means a commitment to a program designed to provide students with a nonduplicative sequence of progressive achievement leading to competencies in a tech-prep education program.

(2) The term "community college" has the meaning provided in section 1201(a) of the Higher Education Act of 1965 for an institution which provides not

less than a two-year program which is acceptable for full credit toward a bachelor's degree.

(3) The term "Secretary" means the Secretary of Education.

(4) The term "local educational agency" has the meaning provided in section 1471(12) of the Elementary and Secondary Education Act of 1965.

(5) The term "tech-prep education program" means a combined secondary and postsecondary program which—

(1) leads to an associate degree;

(2) provides technical preparation in at least 1 field of mechanical, industrial or practical art, trade or applied science;

(3) provides competence in mathematics, science and communications (including through applied academics); and

(4) leads to placement in employment.

SEC. 8. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated $200,000,000 to carry out the provisions of this Act in fiscal year 1989, and such sums as may be necessary in each of the 4 succeeding fiscal years.

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